

**What is claimed is:**

1. An automatic scale for bulk products, of the type that includes a supporting framework for the parts of the machine, means for activating those parts, and means for feeding the products into the scale, which transport them through longitudinal parallel channels and discharge them into containers arranged in corresponding tracks or lines of linear transport means, located along a cyclical closed circuit and between parallel longitudinal vertical planes. The transport means are provided with as many lines as there are channels in the feeding means, the channels and lines of which are placed on the same corresponding planes to enable the transfer of the products, so that the empty containers will continue to be filled. All of the containers circulate through the respective weigh stations, full or empty, and through the corresponding stations for the selective discharge of products already weighed onto the transverse transport means. This type of scale also includes a programming unit that records the tare of each container and the real weight of the product or products that it is collecting, means for connecting that unit to the corresponding parts of the machine, as well as means for guiding the linear transport means and the containers, and means for directing, controlling and ensuring the safety of the scale. It is characterized by the following distinctive features:

2. The automatic scale of claim 1, wherein the means for feeding the products at the entrance of the scale include, in each longitudinal channel, an initial set of transverse eccentric rollers, which are composed of transverse rods provided with a series of circular eccentrics, parallel to each other and perpendicular to the corresponding rods,

and a second set of eccentric transverse rollers, composed of transverse rods provided with a series of circular eccentrics, parallel to each other, perpendicular to the corresponding rod, and provided with various notches in the area closest to the transverse rods. The eccentrics of each rod interleave with those of the juxtaposed rods, with these rods being rotated by corresponding reduction motors with respective transmission means.

3. The automatic scale of claim 1, wherein the feeders are connected to means for transferring the corresponding products, which then discharge the products into the containers; and the transfer means are composed of as many pairs of parallel disks as there are lines in the linear transport means. Between each pair of disks, on their edges, are transverse revolving rods, which project beyond one disk and have a pinion attached that meshes with its respective vertical fixed toothed wheel, with the disks of each pair being activated by the corresponding reduction motors and means of transmission of the feeder. Between each pair of disks, near its central geometric axis, idler shafts are mounted parallel to the transverse rods; and between each pair of rods, one transverse and the other an idler, is mounted a flexible endless belt.

4. The automatic scale of claim 1, wherein the linear transport means – with an initial vertical segment for lowering the containers, a second, lower, horizontal segment, and third vertical segment for raising the containers, and a fourth, upper, horizontal segment – have a series of transverse rods for supporting the containers, mounted between linear pulling means arranged on the guides and moved by various activation and

transmission means. Each rod includes pairs of sliding means for securing each container, between which there is an elastic means that holds them apart and, perpendicular to the rod, various activation means for releasing and grabbing the container corresponding to a supporting pin when it is in the weigh station.

5. The automatic scale of claim 1, wherein the weigh station has means for receiving the containers, provided with pairs of parallel, longitudinal endless belts, upon which the respective containers rest for their weighing and transporting out of the station. The containers are brought to the weigh station by the linear transport means, are released from the supporting pins for weighing, and then picked up by them again. Each pair of endless belts is moved by its respective activating means with its transmission means.

6. An automatic bulk product scale comprising:

- a product feeding and discharge channel comprising:

- a plurality of transverse eccentric rollers that each comprise:

- a transverse rod supporting a plurality of eccentrics, each of the eccentrics having a respective notched segment and being mounted on the transverse rod such that the transverse rod is adjacent to the respective notched segment, whereby the transverse eccentric rollers are adapted to rotate in a wave-like manner and gently transport bulk products in a linear direction through the feeding and discharge channel.

7. The automatic bulk product scale of claim 6, further comprising a product transport means comprising:

a plurality of pairs of supports, each of the pairs of supports being adapted to support a respective flexible belt, and each of the pairs of supports comprising a respective rotatable support adapted to rotate its respective flexible belt,

whereby the product transport means is adapted to receive products from the product feeding and discharge channel gently onto one of the respective flexible belts and subsequently deliver the products gently to one or more product containers.

8. The automatic bulk product scale of claim 6, further comprising an automatic bulk product scale comprising:

a line transport means comprising:

a series of transverse container-supporting means, and means for moving the container-supporting means.

9. The automatic bulk product scale of claim 8, further comprising:

a weigh station wherein containers are brought by the line transport means, released therefrom, weighed, and then returned to the line transport means,

whereby the weighing of each container is not supported by the line transport means during while being weighed.

10. The automatic bulk product scale of claim 9, further comprising a servo-controlled system, wherein the linear speed of the container is maintained in the weigh station,

whereby the container is released from the line transport means and returned to the line transport means at substantially the same speed.

11. An automatic bulk product scale comprising:

- a product feeding and discharge channel; and

- a product transport means comprising:

- a plurality of pairs of supports, each of the pairs of supports being adapted to support a respective flexible belt, and each of the pairs of supports comprising a respective rotatable support adapted to rotate its respective flexible belt,

- whereby the product transport means is adapted to receive products from the product feeding and discharge channel gently onto one of the respective flexible belts and subsequently deliver the products gently to one or more product containers.

12. The automatic bulk product scale of claim 11, wherein the product feeding and discharge channel comprises:

- a plurality of transverse eccentric rollers that each comprise:

- a transverse rod supporting a plurality of eccentrics, each of the eccentrics having a respective notched segment and being mounted on the transverse rod such that the transverse rod is adjacent to the respective notched segment,

- whereby the transverse eccentric rollers are adapted to rotate in a wave-like manner and gently transport bulk products in a linear direction through the feeding and discharge channel.

13. The automatic bulk product scale of claim 11, further comprising a line transport means comprising:

a linear container transport means comprising:

a series of transverse container-supporting means, and means for moving the container-supporting means.

14. The automatic bulk product scale of claim 13, further comprising:

a weigh station wherein containers are brought by the line transport means, released therefrom, weighed, and then returned to the line transport means,

whereby the weighing of each container is not supported by the line transport means during while being weighed.

15. The automatic bulk product scale of claim 14, further comprising a servo-controlled system, wherein the linear speed of the container is maintained in the weigh station, whereby the container is released from the line transport means and returned to the line transport means at substantially the same speed.